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Process for preservation of vegetables

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PROCESS FOR PRESERVATION OF VEGETABLES**Field of the invention**

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The present invention relates to a method for preserving vegetable matter, particularly vegetables and herbs using a heat treatment. The taste and appearance of the vegetable matter after frying are preserved for several months.

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Background of the invention

Many methods are known in the art that can extend the closed shelf life of vegetable matter. These methods mainly
20 comprise storing the vegetable matter in preserving liquids. These liquids contain relatively high levels of salt and/or are very sour. This has a severe and adverse impact on the taste of the vegetable matter. While a salty or sour taste is quite normal for pickled vegetables, it is
25 not acceptable for the heat-treated, particularly the roasted sandwich vegetables, which should have a rather mild taste. The use of those salty or sour preserving liquids may allow a one year preservation time, but the taste of the preserved heat-treated vegetables has been
30 deteriorated and is much different from the taste of freshly roasted or grilled vegetables.

US 5925395 describes methods for preserving fresh vegetables wherein fresh vegetables are cut and exposed to a preserving aqueous solution comprising 0.1 - 10 wt.% of calcium ions and 0.1 - 30 wt.% of ascorbate ions or erythorbate ions. Storage without losing fresh taste, appearance and crispiness is claimed for up to 10 days. This method relates to vegetables that apart from being cut have not been further processed, anyway have not been roasted or otherwise heated.

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The fresh vegetables described in WO96/14760 are kept in a film, which contains a marinating agent, comprising vinegar, sugar, salt, flavourings and others. This method does not relate to vegetables that have been heat-treated.

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Vegetables roasted in an oven belong to the ingredients of certain food products, especially packed ready-to-eat sandwiches. For this application the heat-treated vegetables need an extended shelf-life during which their appearance and taste are closely resembling the appearance and taste of freshly heat-treated vegetables. In WO 03/063600 a method is described where vegetables which have been roasted are submersed in a preserving aqueous marinade. This method provides the roasted vegetables with an extended storage time during which their good taste and appearance is retained and microbiological safety is ensured too.

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The method requires a specific marinade which can not be easily separated from the vegetables and which may be not compatible with the final food composition.

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Summary of the invention

The present invention relates a method as defined in claim 1 for preserving the typical taste and appearance of vegetable matter immediately after its heat treatment. The method can dispense with a preserving marinade.

Detailed Description Of The Invention

The present invention pertains to a method of preserving the taste and appearance of heat-treated vegetable matter.

In the context of the present specification vegetable matter is understood to comprise also mushrooms and those fruits which can bear the heat treatments as described in claim 1. Suitable vegetable matter for use in the invention comprises peppers, courgettes, aubergines, carrots, mushrooms and/or members of the botanical family of Allium such as onions and garlic, but preferably consists of one or more items selected from the group consisting of herbs, peppers, vegetables, garlic and onions.

Herbs preferably are selected from the group consisting of rosemary, parsley, basil, marjoram, oreganum, mint, thyme, bay, dill, mace, sage, sorrel, fennel and cress.

25

After an optional washing step the vegetable matter may be cut into pieces, slices or rings, preferably with a thickness of 0.4 - 1.5 cm, more preferably 0.5 - 1.0 cm and, before heating, optionally covered with a film of an edible oil such as olive oil, sunflower oil or nut oil.

30

The method of the present invention is characterized in that a heat treatment is employed which comprises immersing the selected vegetable matter in an edible oil having a temperature of 160°C - 220°C for 5 seconds - 4 minutes.

- 5 Subsequently the heated vegetable matter is removed from the oil, cooled down and stored together with enough edible oil that the vegetable matter during storage either is immersed in oil or is covered with an oily layer.
- 10 For heating preferably a vegetable oil is selected, such as a common deep frying oil, e.g. soybean oil, sunflower oil, arachide oil and, preferably, olive oil or mixtures of those oils.
- 15 Temperature and time of heating varies with the nature of the vegetable matter. The skilled man is able to select with some trial experiments a suitable temperature and cooking time for obtaining the desired effect.
- 20 Taking into account the claimed ranges for temperature and time of heating, no combination can be found within these ranges which is suited and known for common deep frying of potato slices or French fries. Such frying process takes more time than four minutes to deliver the well known
- 25 edible potato products. On the other hand some vegetable matter is so delicate that it can not bear the claimed temperatures, even when exposed for only a of few seconds. For such vegetable matter the invented method is not suited.

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The heated vegetable matter when cooled is stored in a container, together with such amount of edible oil that the

vegetable matter during storage is oil immersed or at least remains covered with an oily layer.

Optionally to this oil further ingredients are added, e.g. particular flavouring agents, herbs and spices.

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The vegetable matter together with the oil is packed, preferably into a tightly sealed container. Preferably the atmosphere in the container is substituted by an inert atmosphere, using nitrogen, argon or helium for example.

10 In order to allow the consumer inspecting the package contents, preferably a package material is used which is at least partially transparent, e.g. a sealed polyethylene bag. Cooled storage is optional.

15 The vegetable matter in the package preferably is selected and apportioned such that it can be used as part of a meal kit, preferably for use as a so-called soffritto in an Italian meal kit. When used for that purpose the further ingredients necessary for use as a soffritto may be
20 included in the package. When preparing the meal the content of the package needs only a short heating.

Vegetable matter covered with oil after a heat treatment according to the invention can be stored for months without
25 deterioration of its appearance or taste. Without wishing to be bound by theory the method is believed to cause partial or full removal of moisture from the vegetable matter. The heat further has a pasteurising effect and also inactivates any deteriorating enzyme. Therefore it is not necessary to
30 add a preservation agent. When the package is tightly closed also an anti-oxidant is redundant.

The stabilised heat-treated vegetable matter has a lot of applications including as filling of ssvoury sandwiches. With respect to taste and appearance the preserved vegetables closely resemble freshly heat-treated
5 vegetables.

23. 12. 2003

**CLAIMS**

1. Method of preserving vegetable matter comprising the steps,
 - selecting vegetable matter to be preserved,
 - immersing the selected vegetable matter in an edible oil having a temperature of 160°C - 220°C for 5 seconds - 4 minutes,
 - removing the heated vegetable matter from the oil and storing it together with so much edible oil that the vegetable matter during storage is immersed in the oil or covered with an oily layer.
2. Method according to claim 1 characterised in that the vegetable matter consists of one or more items selected from the group consisting of herbs, peppers, vegetables, garlic and onions.
3. Method according to the preceding claim characterised in that the herbs comprise rosemary, parsley, basil, marjoram, oreganum, mint, thyme, bay, dill, mace, sage, sorrel, fennel and cress.
4. Method according to claim 1 characterised in that the vegetable matter after heating is stored while immersed in or covered by olive oil.
5. Method according to claim 1 characterised in that the vegetable matter after heating is stored in a tightly closed package which is at least partially transparent.

6. Method according to claim 1 characterised in that the vegetable matter in the package is selected and apportioned for use in a meal kit.
7. Method according to claim 1 characterised in that the package contains ingredients for a soffritto.
8. Meal kit containing preserved vegetable matter obtained according to the method of claim 1.

ABSTRACT

Method of preservation vegetable matter comprising the steps

- selecting vegetable matter to be preserved,
- immersing the selected vegetable matter in an edible oil having a temperature of 160°C - 220°C for 5 seconds - 4 minutes,
- removing the heated vegetable matter from the oil and storing it together with so much edible oil that the vegetable matter during storage is immersed in oil or covered with an oily layer.

